

REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested.

Claims 43 and 50 have been cancelled. Withdrawn Claims 19, 21-23, 42 and 44-45 have also been cancelled without prejudice to the filing of a divisional application thereto. Since Claims 2-4, 9, 10, 16-18, 20, 32-36, 40, 41 and 46-49 depend from Claim 1 which is believed to be allowable, it is respectfully requested that they be included in any patent issuing from the present application.

Claims 1, 8, 11 and 14 were newly rejected under 35 U.S.C. § 103 as being obvious over WO '993 in view of Boneberg et al. It was the position of the Office Action that WO '993 discloses a fuel cell system including a fuel cell 1, a first flow passage 5 through which the discharged hydrogen-off gas can flow, a second flow passage 6 through which the discharged oxygen-off gas can flow, a valve 7 for regulating the flow of hydrogen-off gas, and a PLC as a control portion. Boneberg et al was cited to teach a mixing portion 4 and burner 3. According to the Office Action, it would have connected the mixing portion 4 of Boneberg et al at the outlets of the flow passages of WO '993 in order to "fully utilize the reactant gasses." However it is respectfully submitted that WO '993 and Boneberg et al teach against such a combination.

WO '993 is directed to a stand alone fuel cell system that normally produces no hydrogen off gas (Tr., p. 3, line 13) but instead normally consumes 100% of the supplied hydrogen (Tr., p. 6, last two lines). In fact, the valve 7 for discharging gas from the anode circuit is normally closed and the hydrogen gas from the anode chamber is recycled via the pump 9. The valve 7 is "temporarily" opened (Tr., p. 9, lines 10-11) only in a rinse cycle during startup to rinse inert gas from the anode circuit. "In this way, the ... hydrogen ... is nearly 100% utilized, since only in the case of enrichment of the anode circuit with inert gas [during start up] ... will unreacted hydrogen be discharged through valve 7 and condensate

water separator 8a” (Tr., p. 10, last seven lines). On the other hand, there is no need to conserve the air in the cathode circuit, and so this circuit lacks a discharge valve.

It may be appreciated that the above description teaches against the connection of the mixing portion 4 of Boneberg et al to the anode and cathode circuits of WO ‘993. Boneberg et al teaches that the mixing portion 4 thereof is provided to supply the burner 3 for heating a reformer (col. 1, lines 10-15). Such a system, as connected to the anode circuit of WO ‘993 would receive substantially no hydrogen gas for the burner: only an inert gas mixture in a brief period during startup. The resulting combustion in the burner 3, if any, could not supply the needs of a reformer, and so such a combination would have has no utility and would not have been obvious to one skilled in the art.

Claim 13 further recites “means for opening and closing the valve at intervals.” This is a “means plus function” limitation. The PLC of WO ‘993 was deemed the equivalent of the claimed means because a PLC “can be programmed to perform any number of tasks” and so the PLC of WO ‘993 “is capable of” performing the claimed function.

However, whatever the merits of combining WO ‘993 and Boneberg et al in the manner indicated in the Office Action, it is respectfully submitted that the equivalence analysis for the PLC of WO ‘993 under 35 U.S.C. § 112, ¶6 is misplaced, and that WO ‘993 fails to teach “means for opening and closing the valve at predetermined intervals.” As was thoroughly explained on page 17 of the last response, in a means-plus-function claim in which the disclosed structure for performing the claimed function is a computer or microprocessor programmed to carry out an algorithm, the disclosed structure is not a general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. *WMS Gaming, Inc. v. International Game Technology*, 184 F.3d 1339, 51 USPQ2d 1385, 1393-1394 (Fed. Cir. 1999).

The structure corresponding to this “means” is a timer. Page 16, lines 18-25; page 19, lines 25-28. Therefore, the PLC of WO ‘993 cannot be equivalent to the presently claimed “means for opening and closing the valve at predetermined intervals” unless it is actually programmed for the function of “opening and closing the valve at predetermined intervals” using a timer or its equivalent. WO ‘993 teaches that the valve 7 is opened during a rinse cycle in response to a detected drop in cell voltage due to an inert gas build-up in the anode circuit (Translation, p. 10, bottom paragraph). WO ‘993 thus teaches that the valve 7 is opened in response to a detected condition rather than at predetermined intervals, and so is not programmed for opening and closing the valve 7 at predetermined intervals, regardless of the structure used.

As for equivalence, an equivalent structure under 35 U.S.C. § 112, ¶6 must provide the claimed function in substantially the same way as the structure disclosed in the specification for performing the function. A PLC which is merely “capable of” providing the claimed function is not an equivalent to the disclosed structure because it does not provide the claimed function until it is programmed to provide the claimed function.

Moreover, there is no articulated reason of record to support the obviousness of programming, i.e., modifying, the PLC of WO ‘993 to provide the claimed function of opening and closing the valve at predetermined intervals. As explained above, WO ‘993 teaches that the valve 7 is opened in response to a detected drop in cell voltage due to an inert gas build-up in the anode circuit, i.e., in response to a detected condition rather than at predetermined intervals. The feature of Claim 13 is instead based on the novel recognition that the build-up of inert gas in the anode circuit can be predicted to occur at predetermined intervals (p. 16, lines 18-25), and so recourse to a sensor to control the valve timing is unnecessary. Since the prior art fails to teach structure corresponding to the “means for opening and closing the valve at predetermined intervals” or its equivalent, and for the

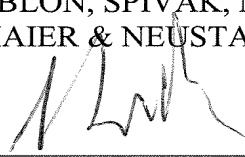
reasons set forth with respect to Claim 1, it is respectfully submitted that Claim 13 defines over the cited prior art.

Concerning the rejections of the dependent claims 37-39 under 35 U.S.C. § 103 as being obvious over WO '993 in view of Boneberg et al and further in view of Shabaker, since Shabaker was cited to teach features of the dependent claims and fails to suggest combining WO '993 and Boneberg et al, it is respectfully submitted that these claims also define over the prior art for the reasons discussed above.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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